Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An optical recording material for recording a hologram, where the recording material ~~which~~ allows recording of information by irradiation of light, ~~comprising~~ and comprises at least

chalcogenide glass which contains Ge and S, and

metal particles dispersed in said chalcogenide glass and made of a metal which is diffusible in said chalcogenide glass by irradiation of said light, and wherein the content of said metal particles is at least 0.1 vol% and less than 2 vol% based on the total volume of said optical recording material.

2. (Original) An optical recording material according to claim 1,

wherein said metal is at least one metal selected from the group consisting of Ag, Au and Cu.

3. (Currently Amended) ~~An~~The optical recording ~~material~~ method according to claim ~~1~~9,

wherein the particle size of said metal is no greater than 1/20 of the wavelength of said light.

4. (Canceled)

5. (Currently Amended) ~~An optical recording material~~ The method according to claim ~~1~~7,

wherein said chalcogenide glass contains Ge and S.

6. (Original) An optical recording medium comprising at least

a substrate material, and

a recording layer comprising an optical recording material according to claim 1

formed on said substrate material.

7. (Currently Amended) A method for manufacturing an optical recording medium which allows recording of information by irradiation of light comprising a step of simultaneously or alternately forming, on a substrate material, films of chalcogenide glass and of a metal which is diffusible in said chalcogenide glass by irradiation of said light, to form on said substrate material a recording layer having metal particles made of said metal dispersed in said chalcogenide glass, wherein the content of said metal particles is controlled to be at least 0.1 vol% and less than 2 vol% based on the total volume of said recording layer.

8. (Original) An optical recording medium fabricated by a method for manufacturing according to claim 7.

9. (Original) An optical recording method comprising a recording step wherein said metal is diffused in said chalcogenide glass by irradiating light on the recording layer of an optical recording medium according to claim 6.

10. (Original) An optical recording method comprising a recording step wherein said metal is diffused in said chalcogenide glass by irradiating light on the recording layer of an optical recording medium according to claim 8.

11. (Original) An optical recording method according to claim 9,

wherein said light is light with a wavelength of at least 0.7X and less than 1.0X, where X is the wavelength of the short wavelength end of the transmitting region of said chalcogenide glass.

12. (Original) An optical recording method according to claim 10,

wherein said light is light with a wavelength of at least 0.7X and less than 1.0X, where X is the wavelength of the short wavelength end of the transmitting region of said chalcogenide glass.

13. (Original) An optical recording method comprising a hologram recording step wherein said metal is diffused in said chalcogenide glass by irradiating recording light composed of a signal beam and a reference beam on the recording layer of an optical recording medium according to claim 6.

14. (Original) An optical recording method comprising a hologram recording step wherein said metal is diffused in said chalcogenide glass by irradiating recording light composed of a signal beam and a reference beam on the recording layer of an optical recording medium according to claim 8.

15. (Original) An optical recording method according to claim 13,

wherein said signal beam and reference beam are both light with a wavelength of at least 0.7X and less than 1.0X, where X is the wavelength of the short wavelength end of the transmitting region of said chalcogenide glass.

16. (Original) An optical recording method according to claim 14,

wherein said signal beam and reference beam are both light with a wavelength of at least 0.7X and less than 1.0X, where X is the wavelength of the short wavelength end of the transmitting region of said chalcogenide glass.

17. (Original) A reproduction method comprising a step of irradiating reproduction light with a wavelength above the short wavelength end of the transmitting region of said chalcogenide glass onto the recording layer of an optical recording medium which is obtainable by an optical recording method according to claim 9.

18. (Original) A reproduction method comprising a step of irradiating reproduction light with a wavelength above the short wavelength end of the transmitting region of said chalcogenide glass onto the recording layer of an optical recording medium which is obtainable by an optical recording method according to claim 10.

19. (Original) A reproduction method comprising a step of irradiating reproduction light with a wavelength above the short wavelength end of the transmitting region of said chalcogenide glass onto the recording layer of an optical recording medium which is obtainable by an optical recording method according to claim 13.

20. (Original) A reproduction method comprising a step of irradiating reproduction light with a wavelength above the short wavelength end of the transmitting region of said chalcogenide glass onto the recording layer of an optical recording medium which is obtainable by an optical recording method according to claim 14.

21. (New) The optical recording material according to claim 1, wherein said metal particles dispersed in said chalcogenide glass have a particle size of no greater than 20 nm.

22. (New) An optical recording method for recording an optical recording medium that includes a recording layer which comprises chalcogenide glass and metal particles dispersed in said chalcogenide glass and made of a metal which is diffusible in said chalcogenide glass by irradiation of light, wherein said method comprises:

irradiating light on the recording layer such that the metal particles diffuse into the chalcogenide glass,

wherein the particle size of said metal is no greater than 1/20 of the wavelength of said light.

REMARKS

Claims 1-20 are pending in this application. By this Amendment, claims 1, 3 and 7 have been amended, and claim 4 has been canceled. New claims 21 and 22 have been added. The amendments to claim 1 are supported in the application as originally filed at p. 12, lines 23-26; p. 14, lines 3-8; and p. 18, lines 13-18. The amendments to claim 7 are supported at p. 14, lines 3-8. Claims 3 and 5 have been amended only to correct dependency. No new matter is added.

In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Rejections Under 35 U.S.C. §102

A. Tseng

The Office Action rejects claims 1-3 and 6 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0219455 to Tseng et al. ("Tseng"), as evidenced by Hackh's Chemical Dictionary. This rejection is respectfully traversed.

Tseng does not anticipate the pending claims under §102(e) because it is not prior art. To qualify as §102(e) prior art, the reference must be an issued patent or an application for patent "by another filed in the U.S. before the invention thereof by the Applicant for patent." See, 35 U.S.C. §102(e). Tseng has a U.S. filing date of September 4, 2003. The pending application claims priority to March 31, 2003 to Japanese Application No. 2003-093937. Applicants herein submit an accurate English translation of Japanese Application No. 2003-093937, thus, perfecting the priority date. Accordingly, Tseng is disqualified as prior art by Applicant's earlier foreign priority date. Accordingly, Tseng is not available as a reference under §102(e), and the rejections should be withdrawn. See, also, MPEP §2136.05.

For the foregoing reasons reconsideration and withdrawal of the rejection of claims 1-3 and 6 are respectfully requested.

B. Kasai

The Office Action rejects claims 1-3 and 5-12 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,214,249 to Kasai et al. ("Kasai"). This rejection is respectfully traversed.

Kasai fails to anticipate the pending claims because it does not disclose an optical recording medium including "metal particles dispersed in said chalcogenide glass."

The Office Action does not point to any disclosure in Kasai which describes a recording material configuration where the diffusible metal is dispersed in the chalcogenide glass. Indeed, Kasai does not teach or disclose this feature, and instead describes using conventional layered techniques whereby a metal layer is laminated to a layer of chalcogenide glass prior to irradiation. See, e.g., Kasai at col. 7, lines 59-66; and Figs. 5 and 6. The layered configuration described in Kasai does not disclose an embodiments where metal particles are dispersed in the chalcogenide glass material, as recited in claim 1. See, also, the pending application at p. 5, lines 2-18, and Fig. 1, which further illustrate embodiments where metal is dispersed in the glass component. Thus, for at least these reasons claim 1 is patentable over Kasai.

Claims 2, 3, 6, 9 and 11 depend from claim 1 and therefore are also not anticipated by Kasai for at least the reasons enumerated above, as well as for the additional features they recite.

Independent claim 7 recites a method for manufacturing an optical recording medium whereby the recording layer is produced "having metal particles made of said metal dispersed in said chalcogenide glass." As discussed above, Kasai does not disclose a recording

material where the metal particles are dispersed in the glass. Thus, for at least this reason, claim 7 is patentable over Kasai.

Claims 5, 8, 10 and 12 depend from claim 7 and therefore are also not anticipated by Kasai for at least the reasons enumerated above, as well as for the additional features they recite.

C. Slinger

The Office Action rejects claims 1, 2, 4, 6-10, 13 and 14 under 35 U.S.C. §102(b) as being anticipated by "Photodoped Chalcogenides As Potential Infrared Holographic Media," Slinger et al., Applied Optics, Vol. 31, No. 14, pp. 2490-2498 (May 1992) ("Slinger").

Slinger fails to anticipate the pending claims because it also does not disclose an optical recording medium having chalcogenide glass and "metal particles dispersed in said chalcogenide glass," as recited in claim 1. Nor does it disclose a method for manufacturing an optical recording medium where a recording layer is produced so that "metal particles made of said metal are dispersed in said chalcogenide glass," as recited in claim 7.

Here also, the Office Action does not point to any disclosure in Slinger which describes an optical recording medium having metal particles that are dispersed in chalcogenide glass. In this regard, Slinger also teaches conventional methods of making optical recording media whereby a laminate structure, including a layer of metal and chalcogenide glass, is constructed prior to irradiation. See, e.g., Slinger at page 2491, second full paragraph; and at Fig. 1. It is accordingly clear that Slinger does not contemplate dispersing the metal component in the chalcogenide glass material, as recited in claims 1 and 7 of the pending application. Thus, for at least these reasons claims 1 and 7 are patentable over Slinger.

Claims 2, 4, 6, 8-10, 13 and 14 depend from one of independent claims 1 and 7 and therefore are also not anticipated by Slinger for at least the reasons enumerated above, as well as for the additional features they recite.

D. Inoue

The Office Action rejects claims 1, 2, 6-8, 13 and 14 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,825,317 to Inoue et al. ("Inoue"). This rejection is respectfully traversed.

Inoue fails to anticipate the pending claims because it does not disclose a recording material having "metal particles dispersed in said chalcogenide glass" where the metal particles are present in amounts of "at least 0.1 vol% and less than 2 vol% based on the total volume of said optical recording material" as recited in claim 1. Independent claim 7 also embodies similar features.

The Inoue patent does not suggest the amount of metal particles that may be dispersed in the chalcogenide glass, and appears to be primarily directed to optical recording media which include a layered structure of metal film and chalcogenide glass, similar to the applied references discussed above. Regarding the amounts of metal used in the recording material, the Office Action only refers to Kasai which, as discussed above, incorporates the metal component in a layered, laminate structure and is not relevant to the amount of metal used in embodiments where the metal is dispersed in the glass. At least for these reasons, claims 1 and 7 are patentable over Inoue.

Claims 2, 6, 8, 13 and 14 depend from one of independent claims 1 and 7 and therefore are also not anticipated by Inoue for at least the reasons enumerated above, as well as for the additional features they recite.

For the foregoing reasons, reconsideration and withdrawal of the rejections of claims 1-20 are respectfully requested.

II. Rejections Under 35 U.S.C. §103

A. Kasai in view of Slinger

The Office Action rejects claims 1-3 and 5-12 under 35 U.S.C. §103(a) as being unpatentable over Kasai in view of Slinger. These rejections are respectfully traversed.

As stated in the Office Action at page 7, the Kasai and Slinger references were applied under §103 "to address the embodiments not anticipated or rendered obvious above." The Office Action further states that it would have been obvious to a person of ordinary skill in the art to modify Kasai "by using a thin Ag and/or Cu film in place of that used such that the content is between 0.1 and 2 vol% and/or the particle size is less than 24 nm (1/20 λ) based on the disclosure of 1-0.0001 % metal atoms."

Kasai and Slinger are not suggestive of the claimed invention because both references relate to layered or laminate structures having a layer of metal film applied to a layer of chalcogenide material, and do not suggest embodiments where the metal particles are dispersed in chalcogenide glass, as discussed above. Additionally, neither reference suggests to use the claimed amount of metal particles. Accordingly, for at least these reasons, claims 1 and 7 are patentable over the combination of Kasai and Slinger.

Claims 2, 3, 5, 6 and 8-12 depend from one of independent claims 1 and 7, and therefore are also not rendered obvious by Kasai in view of Slinger for at least the reasons enumerated above, as well as for the additional features they recite.

B. Kasai in view of Inoue and Slinger

The Office Action rejects claims 1-20 under 35 U.S.C. §103(a) as being unpatentable over Kasai in view of Inoue and Slinger. These rejections are respectfully traversed.

The Office Action states that the Kasai, Inoue and Slinger references are applied under §103 "to address the embodiments not anticipated or rendered obvious above." Applicant notes in this regard that each of the references applied in this rejection are deficient for the

reasons discussed in section I, above, because the applied references do not describe at least a recording material where the metal is dispersed in glass, or a recording material having the claimed amount of dispersed metal. Accordingly, the combination of references does not teach or suggest the claimed invention. Thus, for at least these reasons, claims 1-20 are patentable over the combination of Kasai in view of Inoue and Slinger.

C. Slinger or Kasai in view of Li

The Office Action rejects claims 1-14 under 35 U.S.C. §103(a) as being unpatentable over Slinger or Kasai in view of U.S. Patent No. 6,890,790 to Li et al. ("Li").

The Office Action applies Slinger or Kasai in view of Li reasoning that "it would have been obvious to one of ordinary skill in the art to modify the examples of Kasai et al. or Slinger et al. by co-sputtering the chalcogenide and the metal with the expectation of obtaining the benefits recited in the Abstract of Li et al."

Regarding the rejections in view of Li, Applicant notes that while Li discloses co-sputtering techniques, it does not teach that the metal particles are necessarily dispersed in the chalcogenide glass, as recited in independent claims 1 and 7. Nor does it suggest the claimed amount of metal particles, i.e., where the metal particles are present in amounts of at least 0.1 vol% and less than 2 vol% based on the total volume of the optical recording material. Li does not describe the amount of metal with reference to the vol%, and in any event, appears to employ substantially higher amounts of metal than are claimed. See, e.g., Li at col. 7, lines 22-30.

III. New Claims

The applied references also do not disclose, teach or suggest the subject matter claimed in new claims 21 and 22.

Claim 21 recites that the metal particles which are dispersed in the chalcogenide glass have a particle size of less than 20 nm. Claim 22 is directed to a recording method for a

recording layer having metal particles dispersed in glass, where the method includes irradiating the recording layer, and where the "particle size of the metal is no greater than 1/20 of the wavelength of said light."

The art of record does not disclose the metal particle size of claim 21, and does not disclose a recording method where the particle size of the metal and/or wavelength of light is controlled to be in the claimed parameters.

Accordingly, for at least these reasons, claim 21 and 22 are also patentable over the applied references.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-3 and 5-22 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

James A. Oliff
Registration No. 27,075

Aaron L. Webb
Registration No. 56,930

JAO:ALW/jls

Attachments:
Accurate Translation of JA 2003-093937
Petition for Extension of Time
Amendment Transmittal

Date: June 11, 2007

OLIFF & BERRIDGE, PLC
P.O. Box 19928
Alexandria, Virginia 22320
Telephone: (703) 836-6400

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